

REMARKS/ARGUMENTS

Claims 1 and 3-5 are active in this application. Claim 1 has been amended to correct the structures for (1) and (2) by adding opening parentheses in the appropriate spots. These corrections are self evident and also supported by the specification. No new matter has been added by these amendments.

The present invention relates to a rubber composition. The rubber composition comprises (I) 0.5 to 35% by weight of a conjugated diene-based (co)polymer rubber represented by formulas (1) or (2) having an amino group and an alkoxysilyl group on a polymer chain. Further, the conjugated diene-based (co)polymer rubber component (I) has a weight average molecular weight of 1,000 to 90,000. The rubber composition further comprises (II) 99.5 to 65% by weight of a conjugated diene-based (co)polymer rubber having a weight average molecular weight of 100,000 to 2,000,000, such that the total of (I) and (II) equals 100% by weight of the composition.

The claims stand rejected under 35 U.S.C. § 103 over Kobayashi et al. (based upon its equivalent Tsukimawashi et al. U.S. Publication 2004/0254301), in view of Kobayashi et al. J.P.'936. The Examiner has completely misinterpreted the disclosure of Tsukimawashi et al., as Tsukimawashi et al. does not disclose the preparation of any rubber composition having the required components (I) and (II) of the present invention. In particular, the Examiner asserts that Tsukimawashi et al. discloses the synthesis of (co)polymer rubbers having a molecular weight of 26,000-73,000 in examples of Tables 3, 10, 13 and 21. However, the Examiner's statement regarding the molecular weights of these tables is off by a power of 10. In particular, each of Tables 3, 10, 13 and 21 disclose various (co)polymer rubbers wherein the weight average molecular weight is given in units of "ten thousands". Thus, in each table, for example, a value of 31 would equal 310,000, while a number of 60 would be 600,000. Accordingly, the molecular weight ranges noted by the Examiner do not go from

26,000-73,000 but rather from 260,000-730,000. This cannot suggest component (I) of the present invention which requires a weight average molecular weight between 1,000 and 90,000, far below anything disclosed in those tables. Further, Tsukimawashi et al. nowhere discloses a rubber composition containing two conjugated diene-base (co)polymer rubbers having completely different molecular weights. That is a specific requirement of the present claims.

Kobayashi et al. J.P. '936 cannot overcome the deficiencies of Tsukimawashi et al. In particular, Kobayashi et al. discloses a combination of two polymers. While the two polymers are specified as having different molecular weights, and the disclosure of a polymer having both an amino group and an alkoxysilyl group in the same polymer, the Examiner's reliance upon the statement in paragraph 14 regarding the amino group is stretching the disclosure of Kobayashi et al. a bit much, as Kobayashi et al. only describe for R₁ and R₂ that they represent an alkyl group, a cyclo alkyl group, an aryl group, an alkoxy aryl group or they can be combined to form a ring. There is absolutely NO suggestion, disclosure or otherwise that they can both be hydrogen as required in the structures of the present invention. In other words, the present invention requires that the amino group be a **primary amino group** while Kobayashi et al. requires it to be a **tertiary amino group containing no hydrogens**. To suggest otherwise is technically incorrect.

Even if one were to accept the Examiner's suggestion that Kobayashi et al. and Tsukimawashi et al. can be combined to render the present invention obvious there is nothing within either reference that the specific combination of the two (co)polymer rubbers as required in the present invention, wherein the first of the two (co)polymer rubbers as a primary amino group and a silyl group, would provide any particular benefit relative to the tertiary amines disclosed by Kobayashi et al. Applicants have provided within the present specification Examples 1-3, wherein Example 1 corresponds to the present invention while

Examples 2 and 3 are now outside of the present invention in that they only depict the first conjugated diene-based (co)polymer rubber having a tertiary amino group. Upon examining these data from the specification examples, which are reproduced in the tables below,

Table A

	conjugated dien-based copolymer rubber (I)				conjugated dien-based copolymer rubber (II)		
	copolymer	formula	Mw (ten thousand)	wt (g)	copolymer	Mw (ten thousand)	wt (g)
Example 1	D	$P \sim \text{SiOR} - \text{NH}_2$	0.9	5	C	105	95
Example 2	F	$\text{NR}_2 \sim P \sim \text{SiOR}$	0.4	1	C	105	99
Example 3	F	$\text{NR}_2 \sim P \sim \text{SiOR}$	0.4	30	C	105	70

Table B

	μ (Index)	70°Ctan δ (Index)	Rubber (I) wt (g)
Example 1	128	120	5
Example 2	115	108	1
Example 3	125	118	30

one notes that when it comes to Examples 2-3 having tertiary amino groups there is observed that the Dynamic Frictional Resistance value (μ) is proportional to the weight of blended polymer rubber (I). However, upon using a polymer rubber (I) having a primary amino group as in Example 1, the result shows a much higher Dynamic Frictional Resistance value (μ) at much lower amounts of the rubber (I) present! Shown below, the dynamic frictional resistance values are plotted (Figure 1) as are the tan δ values (Figure 2) in relationship to the weight of polymer (I) in each of Examples 1, 2 and 3, showing the surprising improvement in these values when using Example 1 of the present invention relative to tertiary amino containing compounds of Examples 2 and 3.

Figure 1

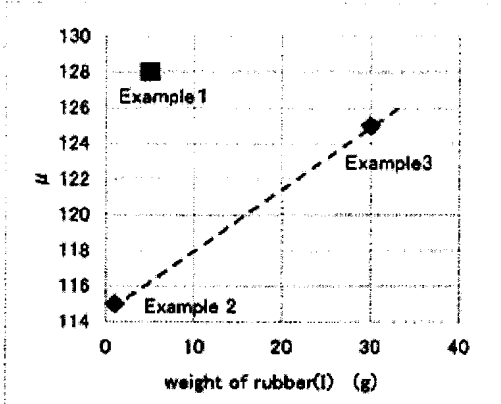
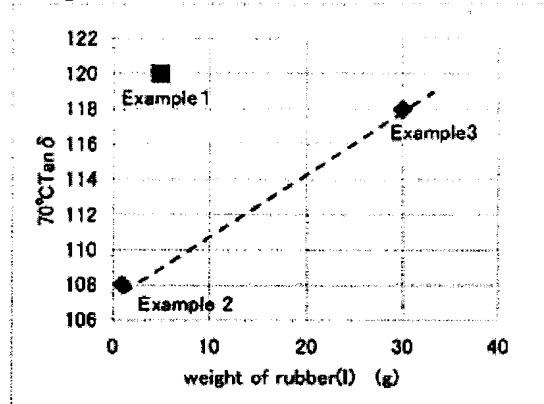


Figure 2



Such an effect is nowhere suggested or disclosed by either of the references cited by the Examiner and accordingly, the data in the present specification is sufficient to overcome any asserted case of obviousness based upon these references. (It is not believed that the data is required in Rule 1.132 Declaration form since it is already present in the specification. The plots in Figures 1 and 2 above are merely provided for ease of viewing the data that is already in the specification.) Therefore, the rejections should be withdrawn.

Applicants note that the objection to Claim 1 has been obviated by the present amendments adding the appropriate opening parentheses in the two structural formulas.

Applicants submit that the application is now in condition for allowance, an early notification of such action is earnestly solicited.

Respectfully submitted,

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